

PATENT COOPERATION TREATY

By Express Mail
No. EL660968314USFrom the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

17-10-2000

HL/HL

Date of mailing
(day/month/year)

13. 10. 00

Applicant's or agent's file reference
48027

IMPORTANT NOTIFICATION

International application No.
PCT/FI99/00572International filing date (day/month/year)
29/06/1999Priority date (day/month/year)
29/06/1998Applicant
NOKIA NETWORKS OY et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

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Authorized officer

Cornudet-Henschel, V

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 48027	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29/06/1999	Priority date (day/month/year) 29/06/1998
International Patent Classification (IPC) or national classification and IPC H04Q7/30		
Applicant NOKIA NETWORKS OY et al.		
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of 4 sheets.</p>		
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none">I <input checked="" type="checkbox"/> Basis of the reportII <input type="checkbox"/> PriorityIII <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicabilityIV <input type="checkbox"/> Lack of unity of inventionV <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statementVI <input type="checkbox"/> Certain documents citedVII <input type="checkbox"/> Certain defects in the international applicationVIII <input checked="" type="checkbox"/> Certain observations on the international application		
Date of submission of the demand 10/01/2000	Date of completion of this report 13. 10. 00	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Nash, M Telephone No. +49 89 2399 2032	



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/FI99/00572

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1,3-9	as published			
2,10	as received on	15/07/2000	with letter of	07/07/2000

Claims, No.:

1-8	as received on	16/07/2000	with letter of	13/07/2000
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Drawings, sheets:

1/3-3/3	as published
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2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/FI99/00572

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-8
	No: Claims
Inventive step (IS)	Yes: Claims 1-8
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-8
	No: Claims



2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

With respect to item V.

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

I

The following documents cited in the international search report have been considered for the purpose of this report:

D1= US-A-5 212 831

D2= EP-A-0 497 490

D3= EP-A-0 549 811

II

1. General Remark

The Application consists of two independent claims, a method of configuring a base station using a mobile communication means (Claim 1) and a mobile station for configuring a base station (Claim 7).

2. State of the Art and its Problem

- a. The **closest prior art** is considered document D1 that discloses a method and apparatus for assigning frequencies in portable radio systems. The method performs the operation by switching a particular transmitter off and then scanning all the candidate transmitter frequencies in addition to measuring signal power from other transmitters/ports. Using this measurement the frequency with the lowest power is tentatively assigned to the transmitter/port that was under investigation. This procedure is reiterated for a number of cycles until frequency reuse stability is achieved (see in particular figure 1 for an overview of the interactive method)

- b. The **problem to solve** is to assign frequencies by means of an automatic procedure that is adaptive to unstable propagation conditions for example caused by changes in the network layout e.g. new transmitters/ports, interior rearrangements or new structures.
- c. The further documents cited in the search report only disclose side aspects of the present invention.

3. Object

The **object of the invention** is to provide a method of configuring base stations so that installation time can be minimized and performed easily from a location away from the base station.

4. Present Invention and Solution

The idea behind the present invention is the following:

- a. To use a mobile communication means (by the installation engineer) for scanning the frequencies of base stations in a cellular network and measuring the signal strength within the frequency band.
- b. Using the signal strength as a parameter to allow the engineer to select an operational frequency of the base station.
- c. Once the selection has been made to transmit the operational frequency back to the base station so that it can configure itself with this parameter.

5. Conclusion

The present invention clearly differentiates itself from the **cited** prior art and is not rendered obvious by the documents that are cited in the search report and is thus seen as novel and inventive, Article 33(2) and (3) PCT.

The dependent Claims 2 to 6 and 8 disclose further embodiments of the independent method of configuring a base station of Claim 1 and the independent mobile station of Claim 7 which thus also fulfil the requirements of Article 33(2) and (3) PCT with respect to novelty and inventive step.

The present application is obviously also industrially applicable and thus fulfils Article 33(4) PCT.

With respect to item VIII.



Certain observations on the international application

The relative term "near" used in Claims 4 and 5 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).

This is achieved by active use of a mobile communications means as a frequency scanner and using the results of the scanning in the configuration of correct base station parameters.

5 The invention concerns a method for configuring a base station. The method according to the invention is characterized in that, which is specified in the characterizing part of the independent claim directed to a method.

10 The invention is further directed to a mobile station for configuring a base station of a cellular telecommunications network. The mobile station according to the invention is characterized in that, which is specified in the characterizing part of the independent claim directed to a mobile station.

Preferred embodiments of the invention are presented in the dependent claims.

15 The present invention allows configuring of an indoor base station with less planning than according to prior art methods. Suitable places for the stations are first located by a rough inspection of the building, whereafter the stations are installed and wired by an installation engineer. The base stations are configured using a mobile communication means for both scanning the frequencies and communicating the results of the scanning to the base station. An advantage of the invention is, that the invention allows obtaining free frequencies on-site for the base stations to operate on and after selecting a sufficient amount of frequencies, uploading the
20 selections to the base stations. Theoretical calculations are not necessarily needed for finding frequencies that are free enough from the effect of

especially advantageous when installing micro- and picocells, i.e. cells with a relatively small size, where simulation methods do not provide as reliable preplanning information as in the case of large macrocells.

5 In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. While a preferred embodiment of the invention has been described in detail, it should be apparent that many modifications and variations thereto are possible.

Claims

1. A method for configuring a base station of a cellular network, **characterized** in that the method comprises the steps of
 - downloading information from the network about frequencies used by neighbouring
 - 5 base stations into a mobile communication means,
 - scanning a frequency band of the cellular network with said mobile communication means for determining signal levels within the frequency band,
 - receiving a selection of an operating frequency for the base station from the user of said mobile communication means,
 - 10 - transmitting configuration information comprising at least the selected operating frequency for the base station from said mobile communication means, and
 - configuring the base station according to the transmitted information.
2. A method according to claim 1, **characterized** in that the method comprises the steps of
 - 15 - downloading at least one parameter set into said mobile communication means from the network,
 - selecting one parameter set from said at least one parameter sets for the base station using said mobile communication means, and
 - transmitting information about the selection of the parameter set to the cellular
 - 20 network.
3. A method according to claim 1, **characterized** in that the method comprises the step of selecting the transmission power of the base station using said mobile communication means.
4. A method according to claim 1, **characterized** in that the method comprises the
 - 25 step of creating the near neighbour relations of the base station.
5. A method according to claim 1, **characterized** in that the method comprises the step of adjusting the near neighbour relations of the base station.
6. A method according to claim 1, **characterized** in that said information about frequencies comprise information of BCCH frequencies of nearby cells and of TCH
 - 30 frequencies corresponding to said BCCH frequencies.

7. A mobile station for configuring a base station of a cellular telecommunications network, **characterized** in that the mobile station comprises
- a processor (41) for controlling frequency scanning,
 - a memory (42) for storing a program for the processor (41),
- 5 - a receiver (45) and an antenna (46) for receiving on a plurality of frequencies, and
- transmitting means for transmitting data obtained from frequency scanning to a base station,
 - processing means to scan a frequency band of the cellular telecommunications
- 10 network for determining signal levels within the frequency band, and
- processing means to transmit configuration information for the base station to the cellular telecommunications network.
8. A mobile station according to the claim 7, **characterized** in that the mobile station further comprises
- 15 - a display (43) for presenting results of said frequency scanning, and
- a keyboard (44) for inputting data.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION CONCERNING INFORMAL
COMMUNICATIONS WITH THE APPLICANT

(PCT Rule 66.6)

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Berggren Oy Ab

20-07-2000

Date of mailing (day/month/year)	18.07.2000
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Applicant's or agent's file reference 48027	REPLY DUE within 15 days from the above date of mailing
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International application no. PCT/FI99/00572	International filing date (day/month/year) 29/06/1999
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Applicant NOKIA NETWORKS OY et al.	
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An informal communication took place on 11/07/2000, between the International Preliminary Examining Authority and the applicant / the agent.

Invitation pursuant to Rules 66.2 c), 66.3 and 66.4 of the PCT

Further examination of the international application has revealed that the application fails to meet the requirements of the PCT and the Regulations as explained in the attached note (Form PCT/IPEA/428).

The Applicant is hereby **invited**, within the time limit indicated above, to **submit a written reply** accompanied by amendments.

If no reply is submitted, the international preliminary examination report will reflect the opinion expressed by this Authority.

Name and mailing address of the international preliminary examining authority  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax +49 89 2399 - 4465	Authorized officer Finnie, A Telephone No. +49 89 2399-8251
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Vertrag über die internationale Zusammenarbeit auf dem Gebiet des Patentwesens
Patent Cooperation Treaty
Traité de coopération en matière de brevets

PCT

Application No.:

PCT/FI99/00572

Note on an informal communication by telephone with the Applicant

Transmittal of a copy of this note with a time limit of 15 days

Participants

Agent: Levlin, Markus

Examiner(s): Nash, M

Summary of the communication

With the Representative clarity issues with respect to the claims were discussed:

Claim 1: generic term "configuring" must at least be found as one of the steps (e.g. original Claim 3).

Claim 8: the wording "the mobile station being arranged to scan..., to transmit..." represents method steps and needs reformulation into "means" since we are dealing with a device claim.

The dependent Claims need to be checked for consistent terminology if the independent claims are modified.

The Representative agreed to making modifications to overcome the clarity issues (Article 84 EPC) and a deadline was fixed for the 26/7/00.

11/07/2000

.....
Date (day / month / year)



Nash, M

.....
Authorized officer of IPEA

PATENT COOPERATION TREATY

By Express Mail
No. EL660968314US

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 48027	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/FI 99/00572	International filing date (day/month/year) 29 June 1999	(Earliest) Priority Date (day/month/year) 29 June 1998
Applicant Nokia Telecommunications OY et al.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (See Box I).
2. ☐ Unity of invention is lacking (See Box II).
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - ☐ filed with the international application.
 - ☐ furnished by the applicant separately from the international application,
 - ☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
 - ☐ transcribed by this Authority.
4. With regard to the title, ☐ the text is approved as submitted by the applicant.
☒ the text has been established by this Authority to read as follows:

A method and a mobile station for configuring a base station.
5. With regard to the abstract,
 - ☒ the text is approved as submitted by the applicant.
 - ☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
Figure No. 3 ☒ as suggested by the applicant. ☐ None of the figures.
☐ because the applicant failed to suggest a figure.
☐ because this figure better characterizes the invention.

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/30, H04Q 7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0549811 A1 (FUJITSU LTD.), 7 July 1993 (07.07.93), abstract --	1-9
A	US 5212831 A (J.C.CHUNG ET AL), 18 May 1993 (18.05.93), abstract --	1-9
A	EP 0497490 A2 (AMERICAN TELEPHONE AND TELEGRAPH COMPANY), 5 August 1992 (05.08.92), abstract -- -----	1-9

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

1 December 1999

Date of mailing of the international search report

10-12-1999

Name and mailing address of the ISA/

Swedish Patent Office

Box 5055, S-102 42 STOCKHOLM

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Authorized officer

Lars Jakobsson /itw

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INTERNATIONAL SEARCH REPORT
Information on patent family members

02/11/99

International application No.
PCT/FI 99/00572

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
EP	0549811	A1	07/07/93	JP	5075532 A	26/03/93
				WO	9302509 A	04/02/93

US	5212831	A	18/05/93	NONE		

EP	0497490	A2	05/08/92	CA	2059079 A,C	31/07/92
				JP	4336720 A	24/11/92
				US	5265150 A	23/11/93

7 July 2000

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 (Number of pages including this page: 2+4)
 Confirmation by mail!

Our Ref.: 48027/ML/MM

REPLY TO WRITTEN OPINION
INTERNATIONAL PATENT APPLICATION PCT/FI99/00572
APPLICANT: NOKIA NETWORKS OY ET AL.
DUE DATE: 7 JULY 2000

Dear Sirs,

On account of the Written Opinion mailed on 7 April 2000 we submit an amended set of claims, which take in account the defects (with respect to item VIII) observed by the examiner.

Regarding the examiner's point 1.a. about claim 1 (item VIII), the applicant does not see the logic, why the detail of where the information is downloaded from should be added to claim 1. The applicant does not agree with the examiner about the cause and effect here ("..thus must specify..."), since the distinctive feature is that information is downloaded, not so much from exactly where.

Regarding point 1.b., the reason for scanning (for determining signal levels within the band) is added to claim 1. This has support on page 4, lines 20 to 24.

Regarding point 1.c., the feature referring to an action of the user has been replaced by the feature of transmitting configuration information for the base station. Since the description recites a plurality of ways of transmitting the configuration information, claim 1 as amended does not limit the invention to any one of these by defining to where the configuration information is transmitted.

Regarding claim 8, language describing the mobile communication means in more detail was added to make it clear, that the mobile communication means of claim 8 is indeed intended to be used for the method of claim 1. Support for the added language can be found from many locations in the specification, lines 15 to 20 of page 8 linking the general description of the inventive method with a mobile communication means.

Berggren Oy Ab

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 LEGAL MATTERS:
 P. Kotve
 S. Henn
 I. Karttunen
 H. Halmetoja
 E-M. Söderström
 J. Talvitie

Regarding point 2, the correction made for point 1.c. applies.

Regarding point 3, the reference to "true spirit" has been removed from page 10.

Yours faithfully,
BERGGREN OY AB

Markus Levlin
Patent Attorney

Enclosures: replacement pages 2 and 10 to 12

This is achieved by active use of a mobile communications means as a frequency scanner and using the results of the scanning in the configuration of correct base station parameters.

5 The invention concerns a method for configuring a base station. The method according to the invention is characterized in that, which is specified in the characterizing part of the independent claim directed to a method.

10 The invention is further directed to a mobile station for configuring a base station of a cellular telecommunications network. The mobile station according to the invention is characterized in that, which is specified in the characterizing part of the independent claim directed to a mobile station.

Preferred embodiments of the invention are presented in the dependent claims.

15 The present invention allows configuring of an indoor base station with less planning than according to prior art methods. Suitable places for the stations are first located by a rough inspection of the building, whereafter the stations are installed and wired by an installation engineer. The base stations are configured using a mobile communication means for both scanning the frequencies and communicating the results of the scanning to the base station. An advantage of the invention is, that the invention allows obtaining free frequencies on-site for the base stations to operate on and after selecting a sufficient amount of frequencies, uploading the
20 selections to the base stations. Theoretical calculations are not necessarily needed for finding frequencies that are free enough from the effect of

especially advantageous when installing micro- and picocells, i.e. cells with a relatively small size, where simulation methods do not provide as reliable preplanning information as in the case of large macrocells.

5 In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. While a preferred embodiment of the invention has been described in detail, it should be apparent that many modifications and variations thereto are possible.

Claims

1. A method for configuring a base station of a cellular network, **characterized in that** the method comprises the steps of
 - downloading information about frequencies used by neighbouring base stations into
- 5 a mobile communication means,
 - scanning a frequency band of the cellular network with said mobile communication means for determining signal levels within the frequency band, and
 - transmitting configuration information for the base station from said mobile communication means.
- 10 2. A method according to claim 1, **characterized** in that the method comprises the steps of
 - downloading at least one parameter set into said mobile communication means,
 - selecting one parameter set from said at least one parameter sets for the base station using said mobile communication means, and
- 15 - transmitting information about the selection to the cellular network.
3. A method according to claim 2, **characterized** in that the method comprises the step of configuring the base station according to the transmitted information about the selection.
4. A method according to claim 1, **characterized** in that the method comprises the
- 20 step of selecting the transmission power of the base station using said mobile communication means.
5. A method according to claim 1, **characterized** in that the method comprises the step of creating the near neighbour relations of the base station.
6. A method according to claim 1, **characterized** in that the method comprises the
- 25 step of adjusting the near neighbour relations of the base station.
7. A method according to claim 1, **characterized** in that said information about frequencies comprise information of BCCH frequencies of nearby cells and of TCH frequencies corresponding to said BCCH frequencies.

8. A mobile station for configuring a base station of a cellular telecommunications network, **characterized** in that the mobile station comprises
- a processor (41) for controlling frequency scanning,
 - a memory (42) for storing a program for the processor (41),
 - 5 - a receiver (45) and an antenna (46) for receiving on a plurality of frequencies, and
 - transmitting means for transmitting data obtained from frequency scanning to a base station,
- the mobile station being arranged to
- 10 - scan a frequency band of the cellular telecommunications network for determining signal levels within the frequency band, and
- to transmit configuration information for the base station to the cellular telecommunications network.
9. A mobile station according to the claim 8, **characterized** in that the mobile
- 15 station further comprises
- a display (43) for presenting results of said frequency scanning, and
 - a keyboard (44) for inputting data.

13 July 2000

European Patent Office

D-80298 Munich
 Germany

Via facsimile: (3 pages)
 999-49-89-2399-4465

CONFIRMATION BY MAIL!

Our ref.: 48027/ML/MM

INTERNATIONAL PATENT APPLICATION NO. PCT/FI99/00572
 APPLICANT: NOKIA NETWORKS OY


Invitation pursuant to Rules 66.2 c), 66.3 and 66.4 of the PCT

Dear Sirs,

Referring to informal communication on 11 July 2000 and notification dated 18 July 2000, we present further amendments to the claims of the present application. Replacement sheets for the claims follow. The new claims take into account the objections presented by the examiner. The subject matter of original claim 3 has been entered into claim 1, and the selection feature has as well been added into claim 1. Claim numbering has also been adjusted. Wording of the independent claim for a mobile station has been changed along the lines suggested by the examiner.

I really do appreciate the active and straightforward attitude of the examiner, and hope that we'll meet on other cases as well in the future.


Yours faithfully,
BERGGREN OY AB


 Markus Levlin
 Patent Attorney

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Toimitusjohtaja
 Managing Director
 L. Nordin*

* PATENTIT,
 HYÖDYLLISYYSMAAILIT,
 * PATENTS,
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 * TRADEMARKS,
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 P. Kolve**
 S. Henn**
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 H. Halmetoja**
 E-M. Söderström**
 J. Talvitie

Claims

1. A method for configuring a base station of a cellular network, **characterized** in that the method comprises the steps of
 - downloading information from the network about frequencies used by neighbouring
 - 5 base stations into a mobile communication means,
 - scanning a frequency band of the cellular network with said mobile communication means for determining signal levels within the frequency band,
 - receiving a selection of an operating frequency for the base station from the user of said mobile communication means,
 - 10 - transmitting configuration information comprising at least the selected operating frequency for the base station from said mobile communication means, and
 - configuring the base station according to the transmitted information.
2. A method according to claim 1, **characterized** in that the method comprises the steps of
 - 15 - downloading at least one parameter set into said mobile communication means from the network,
 - selecting one parameter set from said at least one parameter sets for the base station using said mobile communication means, and
 - transmitting information about the selection of the parameter set to the cellular
 - 20 network.
3. A method according to claim 1, **characterized** in that the method comprises the step of selecting the transmission power of the base station using said mobile communication means.
4. A method according to claim 1, **characterized** in that the method comprises the
- 25 step of creating the near neighbour relations of the base station.
5. A method according to claim 1, **characterized** in that the method comprises the step of adjusting the near neighbour relations of the base station.
6. A method according to claim 1, **characterized** in that said information about frequencies comprise information of BCCH frequencies of nearby cells and of TCH
- 30 frequencies corresponding to said BCCH frequencies.

7. A mobile station for configuring a base station of a cellular telecommunications network, **characterized** in that the mobile station comprises
- a processor (41) for controlling frequency scanning,
 - a memory (42) for storing a program for the processor (41),
 - 5 - a receiver (45) and an antenna (46) for receiving on a plurality of frequencies, and
 - transmitting means for transmitting data obtained from frequency scanning to a base station,
 - processing means to scan a frequency band of the cellular telecommunications
 - 10 network for determining signal levels within the frequency band, and
 - processing means to transmit configuration information for the base station to the cellular telecommunications network.
8. A mobile station according to the claim 7, **characterized** in that the mobile station further comprises
- 15 - a display (43) for presenting results of said frequency scanning, and
 - a keyboard (44) for inputting data.

PATENT COOPERATION TREATY

MM/ML

By Express Mail
No. EL660968314US

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

WRITTEN OPINION

(PCT Rule 66)

To:
BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki *Berggren Oy Ab*
FINLANDE

12-04-2000

Date of mailing (day/month/year)	07.04.2000	7/7/2000 <i>ML</i>
-------------------------------------	------------	--------------------

Applicant's or agent's file reference 48027	REPLY DUE within 3 month(s) from the above date of mailing
International application No. PCT/FI99/00572	International filing date (day/month/year) 29/06/1999
Priority date (day/month/year) 29/06/1998	
International Patent Classification (IPC) or both national classification and IPC H04Q7/30	
Applicant NOKIA NETWORKS OY et al.	

1. This written opinion is the first drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☐ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain document cited
 - VII ☒ Certain defects in the international application
 - VIII ☒ Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
 For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
 For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 29/10/2000.

Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer / Examiner Nash, M Formalities officer (incl. extension of time limits) Cremona, P Telephone No. +49 89 2399 8244
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I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*).

Description, pages:

1-10 as published

Claims, No.:

1-9 as published

Drawings, sheets:

1/3-3/3 as published

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

With respect to item VII.

Certain defects in the international application

1. To meet the requirements of Rule 6.3(b) PCT the independent claims should be cast in the **correct** two-part form, with those features known in combination from the prior art being placed in a preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in a characterising part (Rule 6.3(b)(ii) PCT). However it is noted that the prior art available to the Examination Authority is not considered very pertinent, however from the description it is clear that the Applicant has based his application on prior art that is available to him (see in particular page 1 in which the prior art is described). Thus the Applicant is asked to use this document for the formulation of the two-part form (and to send a copy of the document to the Examination Authority). Furthermore this document should also be introduced in the description (c.f. PCT Guidelines Chapter II-4.4 and Rule 5.1(a)(ii) PCT).
2. The opening part of the description should be brought into conformity with any amended independent claims (Rule 5.1(a)(iii) PCT).
3. Reference signs placed in parentheses should be inserted into **all** the claims to increase their intelligibility (Rule 6.2(b) PCT). This applies to both the preamble and the characterising portion.
4. The Applicant is requested to file amendments by way of replacement pages in the manner stipulated by Rule 66.8(a) PCT. In particular, fair copies of the amendments should be filed in triplicate.

Moreover, the Applicant's attention is drawn to the fact that, as a consequence of Rule 66.8(a) PCT the examiner is not permitted to carry out any amendments under the PCT procedure, however minor these may be.

5. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 34(2)(b) PCT, the applicant is requested to clearly identify (by reciting page and line number) the amendments carried out, no matter

whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based (see also Rule 66.8(a) PCT).

If the Applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.6.

With respect to item VIII.



Certain observations on the international application

1. Claims 1 and 8 are not supported by the description as required by Article 6 PCT, as their scope is broader than justified by the description and drawings. The reasons therefor are the following:

With respect to **Claim 1**:

- a. The term "downloading information about frequencies" is in actual fact the entering of default parameters into the mobile communication means (see phase 2) and thus must specify **where** the information is downloaded from.
- b. The term "scanning of frequency band" (figure 2, 13) is performed only with a single objective, namely to determine the **signal level** of a particular frequency (page 4), no other use is ever disclosed, so this detail must be added to the claim.
- c. The selection step, according to the description, is **performed by the engineer using the mobile communications means** (page 5, lines 7 to 9, figure 2, 14) for the base station to be configured (see generic term of the claim) it is clear that the selected operating frequency must be **transmitted** to the base station (figure 2, 18) in order for the method to even take place. Thus at least a further step, i.e. a **transmission step**, is needed to before the actual **configuration step** for the base station can take place.

N.B. The Applicant is advised to look at the dependent Claims 2 and 3 which can be used to add the required subject-matter to overcome the clarity objection.

With respect to **Claim 8:**

The mobile communication means has to have **means for scanning** (page 4, lines 19 to 21) and **means for selecting** in order to be able to perform the method of claim 1 for which it is obviously intended.

The "for receiving" must at least include **what** is to be received (see above).

2. Claim 1 further does not comply with the requirements of Rule 6.3(a) PCT in that the definition of the matter for which protection is sought is not in terms of **technical features** of the invention. See point "c" of the above made clarity objection which concerns the selecting step that represents **a user instruction** in the method of configuring a base station. From the point of view of a method claim, user inputs **as such** do not represent technical method steps. However it is acceptable in a technical method step that user inputs are awaited and processed after which further technical method steps can follow, for example providing feedback etc. Thus the above mentioned formulations should be replaced by technical features of the mobile communication device that perform the method steps rather than specifying what the user of the device has to input in order for the communication device to perform the method.
3. The reference to the "true spirit" of the invention should be deleted on page 10, line 8 (Article 6 PCT and the Guidelines C-III-4.3a).

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are concerned, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below.

IPEA/ _____

PCT

CHAPTER II

DEMAND

By Express Mail
No. EL660968314US

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only		
Identification of IPEA		Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference 48027/ML/MM
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.6.99)	(Earliest) Priority date (day/month/year) 29 June 1998 (29.6.98)
Title of invention A METHOD FOR CONFIGURING OF A BASE STATION		
Box No. II APPLICANT(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) NOKIA NETWORKS OY P.O.Box 300, FIN-00045 NOKIA GROUP, Finland		Telephone No.: Facsimile No.: Teleprinter No.:
State (that is, country) of nationality: Finland		State (that is, country) of residence: Finland
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) ESSER, Alex Sateenkaari 3 E 91, FIN-02100 ESPOO, Finland		
State (that is, country) of nationality: Germany		State (that is, country) of residence: Finland
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) WESBY, Philip Viinirinne 8 A, FIN-02630 ESPOO, Finland		
State (that is, country) of nationality: United Kingdom		State (that is, country) of residence: Finland
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.		

Form PCT/IPEA/401 (first sheet) (July 1998; reprint July 1999)

See Notes to the demand form

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representative
 and ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.
☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.
☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

BERGGREN OY AB
 P.O.Box 16, FIN-00101 HELSINKI, Finland

Telephone No.:

+358 9 693 701

Facsimile No.:

+358 9 693 3944

Teleprinter No.:

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION**Statement concerning amendments:***

1. The applicant wishes the international preliminary examination to start on the basis of:

☐ the international application as originally filed

the description ☐ as originally filed
☐ as amended under Article 34

the claims ☐ as originally filed
☐ as amended under Article 19 (together with any accompanying statement)
☐ as amended under Article 34

the drawings ☐ as originally filed
☐ as amended under Article 34

2. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☒ which is the language in which the international application was filed.

☒ which is the language of a translation furnished for the purposes of international search.

☒ which is the language of publication of the international application.

☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (<i>specify</i>) | : | sheets |

For International Preliminary
Examining Authority use only

received not received

<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

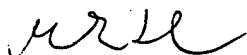
The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> fee calculation sheet | 4. <input type="checkbox"/> statement explaining lack of signature |
| 2. <input type="checkbox"/> separate signed power of attorney | 5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form |
| 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: | 6. <input type="checkbox"/> other (<i>specify</i>): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).

BERGGREN OY AB



Markus Levlin
Patent Agent

HELSINKI, Finland 10 January 2000

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply. ☐ The applicant has been informed accordingly.

4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

FEE CALCULATION SHEET

Annex to the Demand for international preliminary examination

<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;">International application No.</td><td>PCT/FI99/00572</td></tr><tr><td>Applicant's or agent's file reference</td><td>48027/ML/MM</td></tr></table>	International application No.	PCT/FI99/00572	Applicant's or agent's file reference	48027/ML/MM	<div style="border: 1px solid black; padding: 5px;">For International Preliminary Examining Authority use only</div> <div style="border: 1px solid black; padding: 5px; height: 150px; margin-top: 10px;">Date stamp of the IPEA</div>														
International application No.	PCT/FI99/00572																		
Applicant's or agent's file reference	48027/ML/MM																		
Applicant NOKIA NETWORKS OY																			
Calculation of prescribed fees																			
<table style="width: 100%;"><tr><td style="width: 60%;">1. Preliminary examination fee</td><td style="width: 20%; text-align: center;">EUR 1533</td><td style="width: 20%; text-align: center;">P</td></tr><tr><td colspan="3" style="padding-top: 10px;">2. Handling fee <i>(Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.)</i></td></tr><tr><td></td><td style="text-align: center;">EUR 147</td><td style="text-align: center;">H</td></tr><tr><td colspan="3" style="padding-top: 10px;">3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box</td></tr><tr><td></td><td style="text-align: center;">EUR 1680</td><td></td></tr><tr><td></td><td colspan="2" style="text-align: center;">TOTAL</td></tr></table>		1. Preliminary examination fee	EUR 1533	P	2. Handling fee <i>(Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.)</i>				EUR 147	H	3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box				EUR 1680			TOTAL	
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	EUR 1680																		
	TOTAL																		
Mode of Payment																			
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Deposit Account Authorization <i>(this mode of payment may not be available at all IPEAs)</i>																			
<p>The IPEA/ _____ <input type="checkbox"/> is hereby authorized to charge the total fees indicated above to my deposit account.</p> <p><input type="checkbox"/> <i>(this check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)</i> is hereby authorized to charge any deficiency or credit any overpayment in the total fees indicated above to my deposit account.</p>																			
Deposit Account Number _____	Date (day/month/year) _____																		
Signature _____																			

Patent Office

PATENTTI- JA REKISTERIHALLITUS

Patentti- ja innovaatiolinja

Patent & Innovation

Search Report

TUTKIMUSRAPORTTI

By Express Mail
No. EL660968314US

PATENTTIHAKEMUS NRO Appln. No. 981491	LUOKITUS Classification H04B 7/26
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TUTKITTU AINEISTO Research material
Patenttijulkaisukokoelma (FI, SE, NO, DK, DE, CH, EP, WO, GB, US), tutkitut luokat researched classes Published patent specification
Tiedonhaut ja muu aineisto Data search and other material
Epoque - hakuja tietokannoista ja Esillä olevaa patenttihakemusta vastaavan PCT-hakemuksen tutkimustulokset

VIITEJULKAISUT Reference publications		
Kategoria*) Category	Julkaisun tunnistetiedot Identification data	Koskettavat vaatimuksia Relevant claims
X	US-A-5212831 (H04B 7/00)	1, 8
A	EP-A-549811 (H04B 7/26)	
<p>*) X Patentoitavuuden kannalta merkittävä julkaisu yksinään tarkasteltuna Y Patentoitavuuden kannalta merkittävä julkaisu, kun otetaan huomioon tämä ja yksi tai useampi samaan kategoriaan kuuluva julkaisu A Yleistä tekniikan tasoa edustava julkaisu, ei kuitenkaan patentoitavuuden este</p> <p>X) Particularly relevant if taken alone A) Technological background not a novelty bar</p>		
Päiväys Date 31.10.2000	Tutkija Examiner Jyrki Karppinen	

PATENT COOPERATION TREATY

By Express Mail
No. EL660968314US

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:	BERGGREN OY AB P.O. Box 16 FIN-00101 Helsinki FINLANDE
<i>Berggren Oy Ab</i>	
14-01-2000	

Date of mailing (day/month/year) 06 January 2000 (06.01.00) <i>MA/ILL</i>		
Applicant's or agent's file reference 48027		IMPORTANT NOTICE
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.06.99)	Priority date (day/month/year) 29 June 1998 (29.06.98)
Applicant NOKIA NETWORKS OY et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
AU,CN,EP,IL,JP,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IN,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,UA,UG,UZ,VN,YU,ZA,ZW
The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on 06 January 2000 (06.01.00) under No. WO 00/01177

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

**NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF
THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES**

Date of mailing (day/month/year) 06 January 2000 (06.01.00)	IMPORTANT NOTICE
Applicant's or agent's file reference 48027	International application No. PCT/FI99/00572
<p>The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.</p>	

PCT REQUEST

Original (for SUBMISSION) - printed on 29.06.1999 10:18:31 AM

48027

0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form - PCT/RO/101 PCT Request Prepared using	PCT-EASY Version 2.84 (updated 01.04.1999)
0-5	Petition The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	National Board of Patents and Registration (Finland) (RO/FI)
0-7	Applicant's or agent's file reference	48027
I	Title of invention	A METHOD FOR CONFIGURING OF A BASE STATION
II	Applicant	
II-1	This person is:	applicant only
II-2	Applicant for	all designated States except US
II-4	Name	NOKIA TELECOMMUNICATIONS OY
II-5	Address:	P.O. Box 300 FIN-00045 Nokia Group Finland
II-6	State of nationality	FI
II-7	State of residence	FI
II-8	Telephone No.	+358-9-51121
II-9	Facsimile No.	+358-9-51127981
III-1	Applicant and/or inventor	
III-1-1	This person is:	applicant and inventor
III-1-2	Applicant for	US only
III-1-4	Name (LAST, First)	ESSER, Alex
III-1-5	Address:	Sateenkaari 3 E 91 FIN-02100 Espoo Finland
III-1-6	State of nationality	GB DE
III-1-7	State of residence	FI

PCT REQUEST

48027


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III-2	Applicant and/or inventor	applicant and inventor US only WESBY, Philip Viinirinne 8 A FIN-02630 Espoo Finland GB FI
III-2-1	This person is:	
III-2-2	Applicant for	
III-2-4	Name (LAST, First)	
III-2-5	Address:	
III-2-6	State of nationality	
III-2-7	State of residence	
IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent BERGGREN OY AB P.O. Box 16 FIN-00101 Helsinki Finland +358-9-693701 +358-9-6933944 email.box@berggren.elisa.fi
IV-1-1	Name	
IV-1-2	Address:	
IV-1-3	Telephone No.	
IV-1-4	Facsimile No.	
IV-1-5	e-mail	
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW SD SZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AL AM AT AU AZ BA BB BG BR BY CA CH&LI CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW

PCT REQUEST

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V-5	Precautionary Designation Statement In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.		
V-6	Exclusion(s) from precautionary designations	NONE	
VI-1	Priority claim of earlier national application		
VI-1-1	Filing date	29 June 1998 (29.06.1998)	
VI-1-2	Number	981491	
VI-1-3	Country	FI	
VI-2	Priority document request The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s):	VI-1	
VII-1	International Searching Authority Chosen	Swedish Patent Office (ISA/SE)	
VIII	Check list	number of sheets	electronic file(s) attached
VIII-1	Request	4	-
VIII-2	Description	10	-
VIII-3	Claims	2	-
VIII-4	Abstract	1	48027.txt
VIII-5	Drawings	3	-
VIII-7	TOTAL	20	
	Accompanying items	paper document(s) attached	electronic file(s) attached
VIII-8	Fee calculation sheet	✓	-
VIII-9	Separate signed power of attorney	✓	-
VIII-10	Copy of general power of attorney	✓	-
VIII-16	PCT-EASY diskette	-	diskette
VIII-18	Figure of the drawings which should accompany the abstract	3	
VIII-19	Language of filing of the International application	English	
IX-1	Signature of applicant or agent		
IX-1-1	Name	BERGGREN OY AB	
IX-1-2	Name of signatory	Markus Levlin	
IX-1-3	Capacity	Patent Agent	

PCT REQUEST

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FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/SE
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
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PCT (ANNEX - FEE CALCULATION SHEET)

48027

Original (for SUBMISSION) - printed on 29.06.1999 10:18:31 AM

(This sheet is not part of and does not count as a sheet of the international application)

0	For receiving Office use only	
0-1	International Application No.	
0-2	Date stamp of the receiving Office	
0-4	Form - PCT/RO/101 (Annex) PCT Fee Calculation Sheet Prepared using	PCT-EASY Version 2.84 (updated 01.04.1999)
0-9	Applicant's or agent's file reference	48027
2	Applicant	NOKIA TELECOMMUNICATIONS OY, et al.
12	Calculation of prescribed fees	fee amount/multiplier total amounts (FIM)
12-1	Transmittal fee T	⇒ 800
12-2	Search fee S	⇒ 4 600
12-3	International fee Basic fee (first 30 sheets) b1	2 400
12-4	Remaining sheets	0
12-5	Additional amount (X) 55	
12-6	Total additional amount b2	0
12-7	b1 + b2 = B	2 400
12-8	Designation fees Number of designations contained in international application	79
12-9	Number of designation fees payable (maximum 10)	10
12-10	Amount of designation fee (X) 550	
12-11	Total designation fees D	5 500
12-12	PCT-EASY fee reduction R	-740
12-13	Total International fee (B+D-R) I	⇒ 7 160
12-14	Fee for priority document Number of priority documents requested	1
12-15	Fee per document (X) 122	
12-16	Total priority document fee P	⇒ 122
12-17	TOTAL FEES PAYABLE (T+S+I+P)	⇒ 12 682
12-19	Mode of payment	cheque

VALIDATION LOG AND REMARKS

13-2-6	Validation messages Contents	Green? Reference number for attached copy of general power of attorney not indicated.
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PCT (ANNEX - FEE CALCULATION SHEET)

2/2

48027

Original (for SUBMISSION) - printed on 29.06.1999 10:18:31 AM

13-2-7	Validation messages Fees	Green? Please verify that modified fee amounts are correct.
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Original (for SUBMISSION) - printed on 29.06.1999 10:18:31 AM

PCT-EASY INFORMATION SHEET

(For applicant use only, DO NOT submit this sheet with the international application)

VALIDATION LOG

	Contents
Green?	Reference number for attached copy of general power of attorney not indicated.
	Fees
Green?	Please verify that modified fee amounts are correct.

Before submitting the International Application, please carefully verify that:

- the information contained on printed Request form is correct;
- Box IX of the Request form has been signed;
- all elements of the International application as indicated in Box VIII of the Request form have been attached; and,
- the diskette containing the PCT-EASY zip file of the International Application has been enclosed and has been clearly labeled "PCT-EASY", with the applicant's or agent's file reference, and the first applicant's name.

ATTENTION

DO NOT modify any indications on the Request form printout. The attached PCT-EASY application has been locked. If an error or an omission is discovered at this time, you must copy the submitted application as a template and make the change or correction in a new application (using the submitted application as a template). You may create such a template by copying the submitted application from the "Stored Forms" folder to the "New PCT Forms" folder. Open the new (.OWO) file created in the "New PCT Forms" folder, correct the errors and proceed with the submission process again.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 48027	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29/06/1999	Priority date (day/month/year) 29/06/1998
International Patent Classification (IPC) or national classification and IPC H04Q7/30		
Applicant NOKIA NETWORKS OY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 10/01/2000	Date of completion of this report 19.02.00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Nash, M  Telephone No. +49 89 2399 2032

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/FI99/00572

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1,3-9	as published			
2,10	as received on	15/07/2000	with letter of	07/07/2000

Claims, No.:

1-8	as received on	16/07/2000	with letter of	13/07/2000
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Drawings, sheets:

1/3-3/3	as published
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2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/FI99/00572

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-8
	No: Claims
Inventive step (IS)	Yes: Claims 1-8
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-8
	No: Claims

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

With respect to item V.

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

I

The following documents cited in the international search report have been considered for the purpose of this report:

D1= US-A-5 212 831

D2= EP-A-0 497 490

D3= EP-A-0 549 811

II

1. General Remark

The Application consists of two independent claims, a method of configuring a base station using a mobile communication means (Claim 1) and a mobile station for configuring a base station (Claim 7).

2. State of the Art and its Problem

- a. The **closest prior art** is considered document D1 that discloses a method and apparatus for assigning frequencies in portable radio systems. The method performs the operation by switching a particular transmitter off and then scanning all the candidate transmitter frequencies in addition to measuring signal power from other transmitters/ports. Using this measurement the frequency with the lowest power is tentatively assigned to the transmitter/port that was under investigation. This procedure is reiterated for a number of cycles until frequency reuse stability is achieved (see in particular figure 1 for an overview of the interactive method)

- b. The **problem to solve** is to assign frequencies by means of an automatic procedure that is adaptive to unstable propagation conditions for example caused by changes in the network layout e.g. new transmitters/ports, interior rearrangements or new structures.
- c. The further documents cited in the search report only disclose side aspects of the present invention.

3. Object

The **object of the invention** is to provide a method of configuring base stations so that installation time can be minimized and performed easily from a location away from the base station.

4. Present Invention and Solution

The idea behind the present invention is the following:

- a. To use a mobile communication means (by the installation engineer) for scanning the frequencies of base stations in a cellular network and measuring the signal strength within the frequency band.
- b. Using the signal strength as a parameter to allow the engineer to select an operational frequency of the base station.
- c. Once the selection has been made to transmit the operational frequency back to the base station so that it can configure itself with this parameter.

5. Conclusion

The present invention clearly differentiates itself from the **cited** prior art and is not rendered obvious by the documents that are cited in the search report and is thus seen as novel and inventive, Article 33(2) and (3) PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/FI99/00572

The dependent Claims 2 to 6 and 8 disclose further embodiments of the independent method of configuring a base station of Claim 1 and the independent mobile station of Claim 7 which thus also fulfil the requirements of Article 33(2) and (3) PCT with respect to novelty and inventive step.

The present application is obviously also industrially applicable and thus fulfils Article 33(4) PCT.

With respect to item VIII.

Certain observations on the international application

The relative term "near" used in Claims 4 and 5 has no well-recognised meaning and leaves the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).

This is achieved by active use of a mobile communications means as a frequency scanner and using the results of the scanning in the configuration of correct base station parameters.

5 The invention concerns a method for configuring a base station. The method according to the invention is characterized in that, that the method comprises the steps of

- downloading information about frequencies used by neighbouring base stations into a mobile communication means,
- 10 - scanning the frequency band of the cellular network with said mobile communication means, and
- selecting an operating frequency for the base station on basis of said information and said scanning.

The invention is further directed to a mobile station for configuring a base station. The mobile station according to the invention is characterized in that, that the
15 mobile station comprises

- a processor (41) for controlling frequency scanning,
- a memory (42) for storing a program for the processor (41),
- a receiver (45) and an antenna (46) for receiving on a plurality of frequencies,
20 and
- transmitting means for transmitting data obtained from frequency scanning to a base station.

Preferred embodiments of the invention are presented in the dependent claims.

25 The present invention allows configuring of an indoor base station with less planning than according to prior art methods. Suitable places for the stations are first located by a rough inspection of the building, whereafter the stations are installed and wired by an installation engineer. The base stations are configured using a mobile communication means for both scanning the frequencies and communicating the results of the scanning to the base station. An advantage of the
30 invention is, that the invention allows obtaining free frequencies on-site for the base stations to operate on and after selecting a sufficient amount of frequencies, uploading the selections to the base stations. Theoretical calculations are not necessarily needed for finding frequencies that are free enough from the effect of

especially advantageous when installing micro- and picocells, i.e. cells with a relatively small size, where simulation methods do not provide as reliable preplanning information as in the case of large macrocells.

5 In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. While a preferred embodiment of the invention has been described in detail, it should be apparent that many modifications and variations thereto are possible, all of which fall within the true spirit and scope of the invention.

Claims

1. A method for configuring a base station of a cellular network, characterized in that the method comprises the steps of
 - downloading information about frequencies used by neighbouring base stations into a mobile communication means,
 - scanning the frequency band of the cellular network with said mobile communication means, and
 - selecting an operating frequency for the base station on basis of said information and said scanning.
2. A method according to claim 1, characterized in that the method comprises the steps of
 - downloading at least one parameter set into said mobile communication means,
 - selecting one parameter set from said at least one parameter sets for the base station using said mobile communication means, and
 - transmitting information about the selection to the cellular network.
3. A method according to claim 2, characterized in that the method comprises the step of configuring the base station according to the transmitted information about the selection.
4. A method according to claim 1, characterized in that the method comprises the step of selecting the transmission power of the base station using said mobile communication means.
5. A method according to claim 1, characterized in that the method comprises the step of creating the near neighbour relations of the base station.
6. A method according to claim 1, characterized in that the method comprises the step of adjusting the near neighbour relations of the base station.
7. A method according to claim 1, characterized in that said information about frequencies comprise information of BCCH frequencies of nearby cells and of TCH frequencies corresponding to said BCCH frequencies.

8. A mobile station for configuring a base station, characterized in that the mobile station comprises-
- a processor (41) for controlling frequency scanning,
 - a memory (42) for storing a program for the processor (41),
 - a receiver (45) and an antenna (46) for receiving on a plurality of frequencies,
- 5 and
- transmitting means for transmitting data obtained from frequency scanning to a base station.
9. A mobile station according to the claim 8, characterized in that the mobile station further comprises
- 10
- a display (43) for presenting results of said frequency scanning, and
 - a keyboard (44) for inputting data.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 14 DEC 2000

WIPO

PCT

Applicant's or agent's file reference 51005/9016	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/13127	International filing date (day/month/year) 10 JUNE 1999	Priority date (day/month/year) 12 JUNE 1998
International Patent Classification (IPC) or national classification and IPC IPC(7): B23P 13/00 and US Cl.: 29/888.44; 123/188.8		APR 27 2001
Applicant L.E. JONES COMPANY		Technology Center 2600

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 30 NOVEMBER 1999	Date of completion of this report 13 NOVEMBER 2000
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer I CUDA ROSENBAUM
Facsimile No. (703) 305-3230	Telephone No. (703) 308-1792

Shella Wiley
Patent Specialist
Technology Center 3700

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/13127

I. Basis of the report**1. With regard to the elements of the international application:***

- ☐ the international application as originally filed
- ☒ the description:
pages (See Attached) , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____
- ☒ the claims:
pages (See Attached) , as originally filed
pages _____ , as amended (together with any statement) under Article 19
pages _____ , filed with the demand
pages _____ , filed with the letter of _____
- ☒ the drawings:
pages (See Attached) , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____
- ☒ the sequence listing part of the
description: (See Attached) , as originally filed
pages _____ , filed with the demand
pages _____ , filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international

- ☐ contained in the international application in printed form
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages: NONE
- ☒ the claims, Nos. 5
- ☒ the drawings, sheets-fig NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).¹¹

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

***Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/13127

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. statement

Novelty (N)	Claims	<u>1-4 AND 6-13</u>	YES
	Claims	<u>NONE</u>	NO
Inventive Step (IS)	Claims	<u>NONE</u>	YES
	Claims	<u>1-4 AND 6-13</u>	NO
Industrial Applicability (IA)	Claims	<u>1-4 AND 6-13</u>	YES
	Claims	<u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-4 and 6-13 MEET novelty under PCT Article 33(2) since a single reference fails to teach the invention as claimed.

Claims 1-4 and 6-13 LACK an inventive step under PCT Article 33(3) since the invention as claimed would have been obvious in view of the cited reference.

Claims 1-4 and 6-13 have industrial applicability under PCT Article 33(4) since the invention can be used in industry.

----- NEW CITATIONS -----
NONE

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/13127

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

I. BASIS OF REPORT:

This report has been drawn on the basis of the description,
page(s) 1-6, as originally filed.
page(s) NONE, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the claims,
page(s) NONE, as originally filed.
page(s) NONE, as amended under Article 19.
page(s) NONE, filed with the demand.
and additional amendments:
PAGES 7-8, FILED WITH THE LETTER OF 12 JUNE 2000

This report has been drawn on the basis of the drawings,
page(s) 1, as originally filed.
page(s) NONE, filed with the demand.
and additional amendments:
NONE

This report has been drawn on the basis of the sequence listing part of the description:
page(s) NONE, as originally filed.
pages(s) NONE, filed with the demand.
and additional amendments:
NONE

What is Claimed is:

1. A process for forming a prehardened valve seat insert for insertion into a cylinder head or an engine block of an internal combustion engine, said process
5 comprising the steps of:
forming the valve seat insert;
precision machining the valve seat insert to precise tolerances so that the valve seat insert can be installed in one of the cylinder head and the engine block without the need for additional seat machining; and
10 treating the valve seat insert with a wear resistant treatment prior to inserting the valve seat insert into one of the cylinder head and the engine block, wherein the treating step includes ferritic nitrocarburizing, carbonitriding, or a physical vapor deposition process.
- 15 2. The process of claim 1 wherein the treating step includes ferritic nitrocarburizing the valve seat insert.
3. The process of claim 1 wherein the treating step includes carbonitriding the
20 valve seat insert.
4. The process of claim 1 wherein said treating step includes treating the valve seat with a wear resistant surface treatment.
5. Cancel.
- 25 6. The process of claim 1 wherein said wear resistant treatment produces less than 0.05 mm of dimensional change on the surface of the valve seat insert.
7. The process of claim 1 wherein the treating step includes using a physical
30 vapor deposition process to apply a wear resistant surface treatment to the valve seat insert.
8. The process of claim 1 wherein the wear resistant treatment includes a titanium nitride coating.

9. The process of claim 1 wherein the wear resistant treatment includes a chromium nitride coating.

5 10. The process of claim 1 wherein the wear resistant treatment includes a chromium carbide coating.

11. The process of claim 1 wherein the wear resistant treatment includes a titanium aluminum nitride coating.

10

12. A valve seat insert prepared by a process comprising the steps of:
forming the valve seat insert;

precision machining the valve seat insert to such precise tolerances so that the valve seat insert can be installed in one of the cylinder head and the engine block without
15 the need for additional seat machining; and

treating the valve seat insert with a wear resistant treatment prior to inserting the valve seat insert into one of the cylinder head and the engine block, wherein the treating step includes ferritic nitrocarburizing, carbonitriding, or a physical vapor deposition process.

20

13. The valve seat insert of claim 12 wherein the treating step includes ferritic nitrocarburizing.

W/V

PCT

No Record

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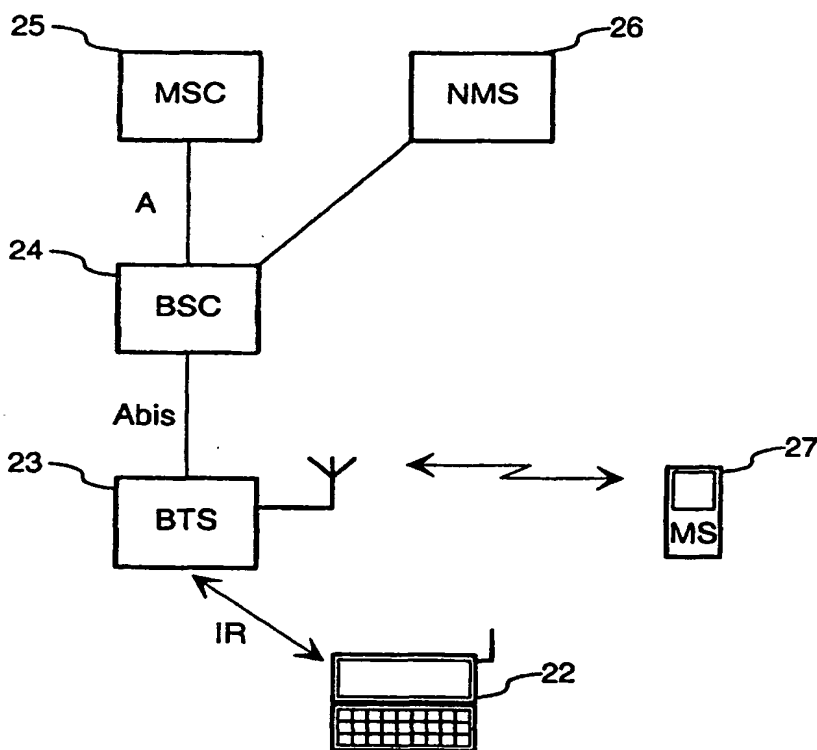
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>(21) International Application Number: PCT/FI99/00572</p> <p>(22) International Filing Date: 29 June 1999 (29.06.99)</p> <p>(30) Priority Data: 981491 29 June 1998 (29.06.98) FI</p> <p>(71) Applicant (for all designated States except US): NOKIA NETWORKS OY [FI/FI]; P.O. Box 300, FIN-00045 Nokia Group (FI).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): ESSER, Alex [DE/FI]; Sateenkaari 3 E 91, FIN-02100 Espoo (FI). WESBY, Philip [GB/FI]; Viinirinne 8 A, FIN-02630 Espoo (FI).</p> <p>(74) Agent: BERGGREN OY AB; P.O. Box 16, FIN-00101 Helsinki (FI).</p> </td> <td style="width: 50%; vertical-align: top;"> <p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> </td> </tr> </table>			<p>(21) International Application Number: PCT/FI99/00572</p> <p>(22) International Filing Date: 29 June 1999 (29.06.99)</p> <p>(30) Priority Data: 981491 29 June 1998 (29.06.98) FI</p> <p>(71) Applicant (for all designated States except US): NOKIA NETWORKS OY [FI/FI]; P.O. Box 300, FIN-00045 Nokia Group (FI).</p> <p>(72) Inventors; and (75) Inventors/Applicants (for US only): ESSER, Alex [DE/FI]; Sateenkaari 3 E 91, FIN-02100 Espoo (FI). WESBY, Philip [GB/FI]; Viinirinne 8 A, FIN-02630 Espoo (FI).</p> <p>(74) Agent: BERGGREN OY AB; P.O. Box 16, FIN-00101 Helsinki (FI).</p>	<p>(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>
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(54) Title: A METHOD AND A MOBILE STATION FOR CONFIGURING A BASE STATION

(57) Abstract

The invention relates to a method and an arrangement for configuring an indoor base station for a cellular mobile telecommunications network. According to an advantageous embodiment of the inventive method, a mobile communications means is used to scan possible transmission frequencies on-site to find out free frequencies to operate on, and to transmit the results of scanning of the frequencies to the indoor base station and to choose proper parameters for the indoor base station. An arrangement according to an advantageous embodiment of the invention comprises an indoor Base Transceiver Station, mobile communications means for scanning frequencies and to find free frequencies and a Base Station Controller for controlling the base station.



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A method and a mobile station for configuring a base station.

The object of the invention is to present a method for configuring an indoor cellular base station and an arrangement where this method is implemented.

- 5 In figure 1 a known method to install and configure cellular Base Transceiver Stations is shown. Digital maps of the building and a database describing positions of external antennas are first edited in step 1. The indoor network for the building is planned in step 2 using a network planning tool with the data acquired in the previous phase. The base stations that are allocated to the building are installed and
10 configured in step 3 using the planned parameters. When the base stations are activated the performance of the indoor network is measured in step 4. If the performance is found acceptable in step 5, the installing and configuring of the base stations is ended. If any correctable errors are found in step 5, the procedure is repeated from step 2 using the data obtained from the measurements. Additional
15 base stations are installed and/or different configuration parameters experimented with in step 3. The performance of the resulting configuration is measured in step 4 and compared in step 5 to the desired performance. The procedure is repeated from step 2 until an acceptable result is obtained.

- One problem in the configuration of base stations according to the prior art is the
20 time required to configure a station for the specific installation area, for example an apartment in a building. The prior art methods used are time consuming, since simulation is typically used for finding correct operation parameters for the base station. Further, extensive measurement campaigns are typically performed for finding the optimum locations for the base stations. As a result, installation time for
25 a base station may be up to 8 days.

An object of the invention is to present a better and easier method for configuring an indoor base station in a building. A further object of the invention is to provide a method, which requires considerably less installation time needed for installation of a single base station.

This is achieved by active use of a mobile communications means as a frequency scanner and using the results of the scanning in the configuration of correct base station parameters.

The invention concerns a method for configuring a base station. The method according to the invention is characterized in that, that the method comprises the steps of

- downloading information about frequencies used by neighbouring base stations into a mobile communication means,
- scanning the frequency band of the cellular network with said mobile communication means, and
- selecting an operating frequency for the base station on basis of said information and said scanning.

The invention is further directed to a mobile station for configuring a base station. The mobile station according to the invention is characterized in that, that the mobile station comprises

- a processor (41) for controlling frequency scanning,
- a memory (42) for storing a program for the processor (41),
- a receiver (45) and an antenna (46) for receiving on a plurality of frequencies, and
- transmitting means for transmitting data obtained from frequency scanning to a base station.

Preferred embodiments of the invention are presented in the dependent claims.

The present invention allows configuring of an indoor base station with less planning than according to prior art methods. Suitable places for the stations are first located by a rough inspection of the building, whereafter the stations are installed and wired by an installation engineer. The base stations are configured using a mobile communication means for both scanning the frequencies and communicating the results of the scanning to the base station. An advantage of the invention is, that the invention allows obtaining free frequencies on-site for the base stations to operate on and after selecting a sufficient amount of frequencies, uploading the selections to the base stations. Theoretical calculations are not necessarily needed for finding frequencies that are free enough from the effect of

the external network outside the building. The means used for scanning and selecting the frequencies can be made easy to use. In an advantageous embodiment of the invention, no manual setting of frequencies for the base station is needed because of automated data exchange between the scanning means and the base station. Configuring of a base station with the inventive method and arrangement is much faster compared to prior art methods. Configuration time can be shortened as long as about 8 days according to the prior art methods to as low as 1 hour using the inventive method.

The invention is described in detail in the following by referring to the attached drawings, in which

figure 1 presents a prior art method to configure a base station,

figure 2 presents a method according to an advantageous embodiment of the invention in a flow chart,

figure 3 presents a block diagram of an advantageous embodiment of the invention, and

figure 4 presents a block diagram of a mobile station according to one advantageous embodiment of the invention.

Figure 1 was described previously in connection with description of prior art.

In one advantageous embodiment of the invention, installation of an indoor cellular network proceeds in the following four phases. This embodiment is illustrated by figure 2.

1. Preparation of the building

In the first phase 11, the building is roughly inspected, if possible. Based on the inspection and maps of the building, preliminary locations for base stations are located. Preferably, a slightly larger number of preliminary locations are preplanned than will actually be used. Some locations are preferably prepared near entrances to the building to form a gateway to surrounding cellular network. Sufficient overlap with the surrounding network is necessary to allow smooth handover of connections

from the in-building network to the surrounding network and vice versa. A data transmission network is constructed in the building based on these preplanned preliminary locations. For example, existing telephone wiring can be used for construction of the data transmission network. Any necessary network elements for creating the data transmission network in addition to the wiring are installed at this phase.

2. Preparation of parameters

At the second phase 12, default parameter sets, cell identifiers, base station identifiers and any other eventual necessary base station setup information are assigned to each location. A frequency band is selected for the indoor cellular system. The frequency band may be, for example, a dedicated office band or the whole band of the particular network operator. All this information is downloaded to a mobile communication means of an installation engineer. Further, information describing the contents of the frequency band, i.e. frequencies used by the neighbouring external cellular system using the same frequency band is downloaded. Particularly, BCCH frequencies of the neighbouring cells are listed, along with corresponding TCH frequencies.

3. Installation of base stations

In the third phase, the base stations are installed and configured. At each installation location, an installation engineer scans the chosen frequency band with said mobile communication means. The interference from an external network is typically strongest near windows, doors and other ports in walls. Preferably, the mobile communication means presents a spectrum display of measured signal levels within the frequency band, with BCCH and TCH frequencies of the neighbouring cells of the external network indicated in the same display. This allows the installation engineer to choose an operation frequency for the base station, which frequency is free enough from outside interference. With the aid of the indicated BCCH frequencies and corresponding TCH frequencies of neighbouring cells, the engineer can avoid selecting a frequency, which is used as a TCH channel in a neighbouring cells. During a single measurement session, a neighbouring cell may have set the transmission level of the TCH channel relatively low, which would be seen as a low enough interference level inside of the building. However, since the transmission level of TCH channels is generally adjusted according to quality of

radio link to various mobile stations, at some another time the neighbouring cell may use considerably higher transmission power for the TCH channel. Therefore, the signal level of the corresponding BCCH frequency is preferably taken into account. Transmission power of BCCH channels is not varied, whereby observation
5 of the signal level at a BCCH frequency gives the a better worst-case estimate of the level of interference at the TCH frequency of the same cell.

After selecting the frequency, the engineer selects the desired 15 parameter set according to the surroundings of the base station location and sets the power level of the base station. The power level and the parameter set can be changed afterwards if
10 necessary, for example, if during actual use of the station it is found that a slightly different power level and/or parameter set is appropriate. The power level can preferably be selected from a plurality of different preset levels. Next, the engineer preferably installs 16 the base station into the location, connects it to data transmission and power lines, and switches the base station on. After the base
15 station has performed any eventual power-on tests, the engineer inputs 17 the base station identification information to the base station. This may be proceeded using a keypad of the base station, for example, or by transmitting the information by an IR link or a cable from the mobile communication means to the base station. When the base station has received the identification information, it can perform the
20 configuration of the transmission link between the base station and the corresponding base station controller (BSC) of the indoor cellular system.

When the transmission link between the base station and the BSC is ready for use, the rest of the configuration information is input to the base station. Preferably, this is performed by transmitting 18 the configuration information from the mobile
25 communication means of the installation engineer to the BSC, which then configures 19 the base station according to the received configuration information. The transmission of the configuration information to the BSC may be effected, for example, via the base station using an IR link or a cable between the base station and the mobile communication means, or for example, using a data call through the
30 external network between the mobile communication means and the network management system of the indoor cellular system. After the configuration, the indoor cellular network instructs the base station to be activated 20.

In another embodiment of the invention, the configuration data is transmitted to the network management system (NMS) of the indoor cellular system, which then

configures the base station. In such an embodiment, the BSC effectively only relays the configuration commands from the NMS to the base station.

Before transmission of the configuration data, the connection should in a preferable embodiment of the invention be authenticated by the indoor cellular network for security reasons.

The procedure of the third phase is repeated for each site. Since in the preplanning phase more sites were prepared than will most probably be needed, the installation engineer may leave some sites uninstalled according to his/her judgment, for example.

10 Preferably, the installing of the base stations is started from the gateway cells because the number of frequencies that are available decreases each time when a site is set up, whereafter there are fewer frequencies to choose from, and since designing of the necessary overlap between the external and indoor network requires more freedom in the selection of the frequencies than setting up of a single indoor base station.

4. Ensuring the functioning of the indoor network

In the fourth phase 21, after the base stations have been installed, the operation of the indoor network is checked. This can be performed by the installation engineer or engineers by moving in the building while having a connection to the network with the mobile communication means of the engineer. Preferably, the mobile communication means is equipped with means such as a program for monitoring the performance of the network. If locations having poor field strength are observed, more base stations can be installed to cover such coverage holes. Also, the operating parameters of the base stations may be adjusted at this phase.

25 Figure 3 illustrates an arrangement according to an advantageous embodiment of the invention. Mobile communications means 22 is used for the configuration of the Base Transceiver Station BTS 23 via an IR or a serial interface. BTS 23 is connected to a base station controller BSC 24 through an Abis interface. BSC 24 is used to set the parameters of the base station 23. BSC 24 is further connected to an Mobile Switching Centre MSC 25 through an A interface. The MSC 25 performs switching functions and other duties. BSC 24 is also connected to a Network

Management Station NMS 26 which is a part of the network supervision system. NMS 26 is used to control the network elements of the network. The mobile station MS 27 can be used for normal calls after the configuration of the base station 23.

5 The mobile communications means 22 is preferably a mobile phone with speech and data capabilities and a special program for controlling the scanning and input of the configuration information. The program obtains data from the NMS 26, controls measuring of the reception levels at the frequencies of the chosen frequency band, manages configuration parameters such as the power levels and other necessary parameters and controls sending of configuration data to the BTS 23. Preferably the
10 application for measuring reception levels calculates averaged reception levels for the frequencies. The reception levels are preferably space averaged, which can be done for example by moving the mobile communication means around within the area of the base station site and averaging the measurement results obtained during the movement.

15 The BTS 23 can include control lights for indicating the status of the equipment. Different status indications can be for example the following: "just powered-on", "transmission line ready", "on-line but barred and no handovers", "on-line but barred" and "fully on-line".

20 Figure 4 shows a block diagram of a mobile station for configuring a base station according to an advantageous embodiment of the invention. A processor 41 is used for controlling frequency scanning, a memory 42 for storing a program for the processor 41, a receiver 45 and an antenna 46 for receiving on a plurality of frequencies, and transmitting means 47 for transmitting data based on frequency scanning to a base station. The mobile station also includes a display 43 for
25 presenting menus and results of the frequency scanning and a keyboard 44 for inputting data as a frequency selection for the BTS. The transmitting means include an IR transmitter 47 and an IR light emitting diode 48 for transmitting data to the BTS.

30 In other embodiments of the invention, other transmission means such as a serial RS-232 line can be used to transmit the configuration information. However, the invention is not limited to these ways of transmitting the configuration information, since any other way of transmitting the configuration information may be used. For example, if the mobile communication means which is used for scanning is a dual

band device capable of operating in two different frequency bands, such as the 900 MHz GSM band and the 1800 MHz GSM band, the mobile communication means can scan the frequencies of a first of these two bands and transmit the configuration information on the second of these two bands to for example another mobile communication means connected to the BSC 24. In an another advantageous embodiment of the invention, the mobile communication means is used first to scan and store information, and after the scanning, to send the configuration data using the same frequency band via the outside cellular network to the BSC.

In a preferable embodiment of the invention, a multifunction mobile communication means is used for scanning the frequencies. A multifunction mobile communication means typically comprises elements needed for a cellular phone and a data processing part having a display and a keyboard for processing data transmitted using the cellular phone part. Such a multifunction mobile communication means is presented, for example, in the magazine Mobile Communications International, Issue no. 31, May 1996, on pages 57 and 58. According to an advantageous embodiment of the invention, such a multifunction mobile communication means is equipped with a program for controlling the scanning and performing other necessary tasks for base station configuration as described previously. The following example is presented to explain an advantageous embodiment of the invention. We assume that an office building of three floors is in an area having an external cellular network, and indoor base stations are to be installed in the building. First the building is visited to find out approximate number of the base stations needed and the locations for the base stations. The entrance corridor of the building must have some gateway cells and all rooms separated with solid walls must have at least one cell. The most probable places of interference from the external network in each cell are measured using mobile communications means for frequency scanning to find free frequencies in all places where the mobile phones will be operated in the area of the cell. Subsequently, one of the free frequencies and a power level is selected for the base station of each cell. The base station is installed with preset parameters, and selected configuration data is transmitted to the base station. The station is then activated and the procedure is repeated for the next base station and cell. The stations are preferably configured in order so that the gateway cells are configured first, then the other cells on the ground floor second and the cells in the other floors last.

After the actual installation the network is preferably optimized so that the at least the following key aspects are in condition. The indoor network should not unnecessarily disturb the surrounding outdoor network, which can be avoided by using a sufficient number of indoor base stations with low power levels. However, the number of base stations should not be too high to avoid unnecessary costs. The number of sites can be optimized with intelligent trimming of base station parameters such as the power levels. If the configuration of the outdoor network is changed at a later time, the indoor network has to be checked to avoid conflicting frequencies after the change.

- 5 the number of base stations should not be too high to avoid unnecessary costs. The number of sites can be optimized with intelligent trimming of base station parameters such as the power levels. If the configuration of the outdoor network is changed at a later time, the indoor network has to be checked to avoid conflicting frequencies after the change.
- 10 In one advantageous embodiment of the invention, the near neighbour relations of the indoor network are specified preliminarily during the BTS site location phase, and the near neighbour relations are adjusted as base stations are installed. If some base station locations are left installed, corresponding entries in the near neighbour list are removed.
- 15 In another advantageous embodiment of the invention, the near neighbour lists are created during the BTS installation phase. For example, the installation engineer can enter each newly installed BTS to the near neighbour list and define the near neighbour relations of the BTS after installation of the BTS by using the mobile communication means of the engineer.
- 20 The parameter sets described previously preferably correspond to different surroundings of a base station. For example, one parameter set may be intended for base stations at open offices and other open spaces and a second for locations surrounded by separate rooms. During the preplanning phase, one or more such parameter sets may be defined. Preferably, a parameter set identification is
- 25 associated with each parameter sets, whereby at BTS installation the engineer only needs to select the desired identification without having to enter all of the various parameters.

- Although the invention has been described previously using examples and terminology pertaining to a GSM network, the invention is not limited to any way to
- 30 the GSM network only. The inventive installation method may for example be used with the UMTS system as well. Further, although the invention has been described using an indoor cellular system as an example, the inventive method may advantageously be used also in other types of surroundings. The inventive method is

especially advantageous when installing micro- and picocells, i.e. cells with a relatively small size, where simulation methods do not provide as reliable preplanning information as in the case of large macrocells.

- 5 In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention. While a preferred embodiment of the invention has been described in detail, it should be apparent that many modifications and variations thereto are possible, all of which fall within the true spirit and scope of the invention.

Claims

1. A method for configuring a base station of a cellular network, **characterized in that** the method comprises the steps of
 - downloading information about frequencies used by neighbouring base stations into
 - 5 a mobile communication means,
 - scanning the frequency band of the cellular network with said mobile communication means, and
 - selecting an operating frequency for the base station on basis of said information and said scanning.
- 10 2. A method according to claim 1, **characterized in that** the method comprises the steps of
 - downloading at least one parameter set into said mobile communication means,
 - selecting one parameter set from said at least one parameter sets for the base station using said mobile communication means, and
 - 15 - transmitting information about the selection to the cellular network.
3. A method according to claim 2, **characterized in that** the method comprises the step of configuring the base station according to the transmitted information about the selection.
4. A method according to claim 1, **characterized in that** the method comprises the
- 20 step of selecting the transmission power of the base station using said mobile communication means.
5. A method according to claim 1, **characterized in that** the method comprises the step of creating the near neighbour relations of the base station.
6. A method according to claim 1, **characterized in that** the method comprises the
- 25 step of adjusting the near neighbour relations of the base station.
7. A method according to claim 1, **characterized in that** said information about frequencies comprise information of BCCH frequencies of nearby cells and of TCH frequencies corresponding to said BCCH frequencies.

8. A mobile station for configuring a base station, **characterized** in that the mobile station comprises-

- a memory (42) for storing a program for the processor (41),
- a receiver (45) and an antenna (46) for receiving on a plurality of frequencies,

5 and

- transmitting means for transmitting data obtained from frequency scanning to a base station.

9. A mobile station according to the claim 8, **characterized** in that the mobile station further comprises

- 10
- a display (43) for presenting results of said frequency scanning, and
 - a keyboard (44) for inputting data.

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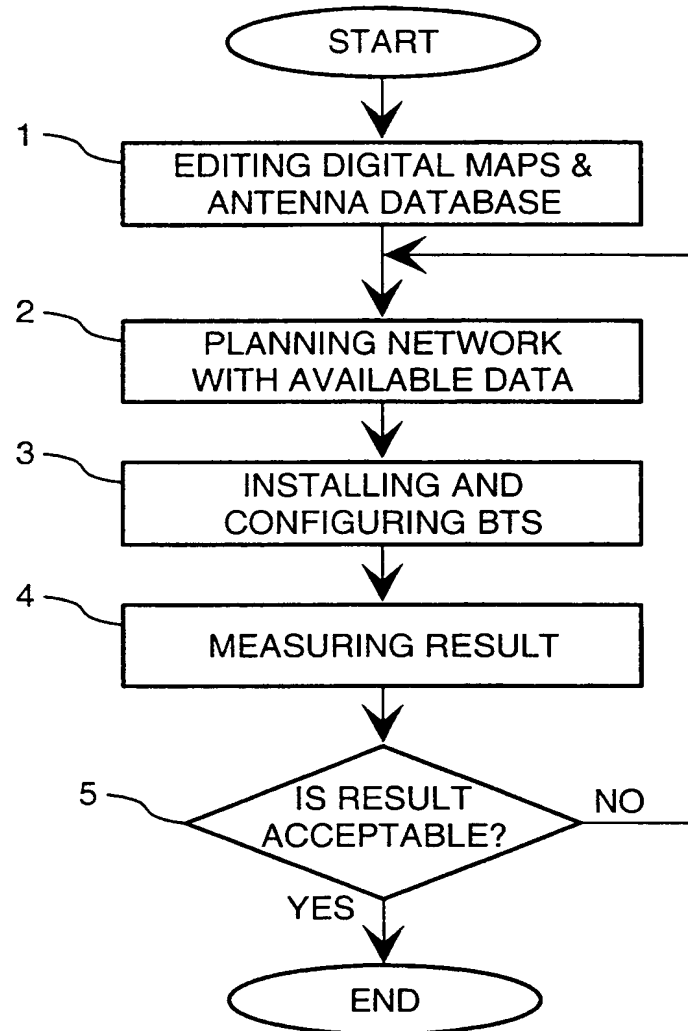


FIGURE 1

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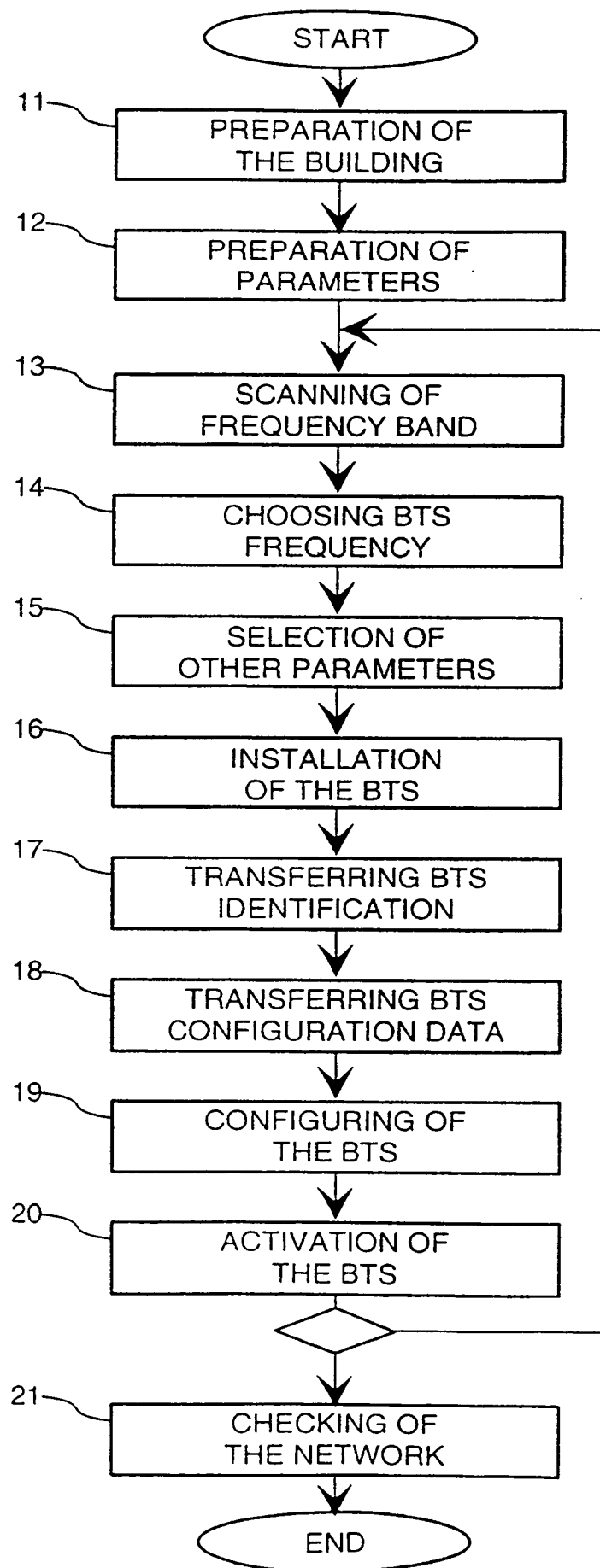


FIGURE 2

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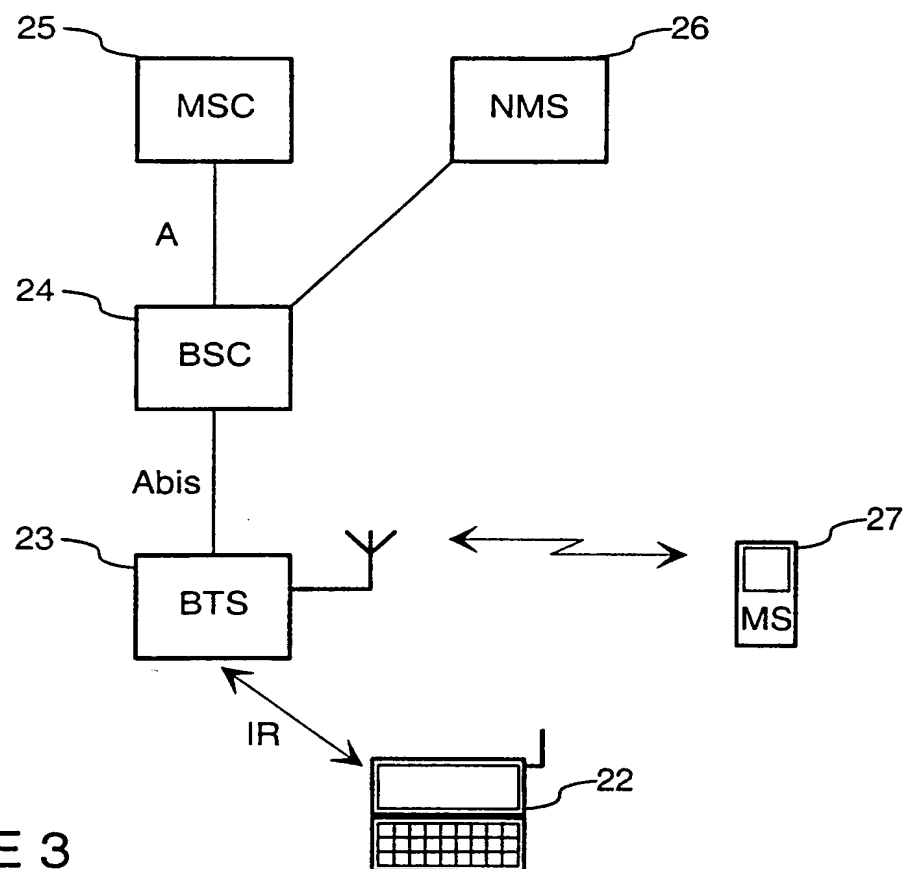


FIGURE 3

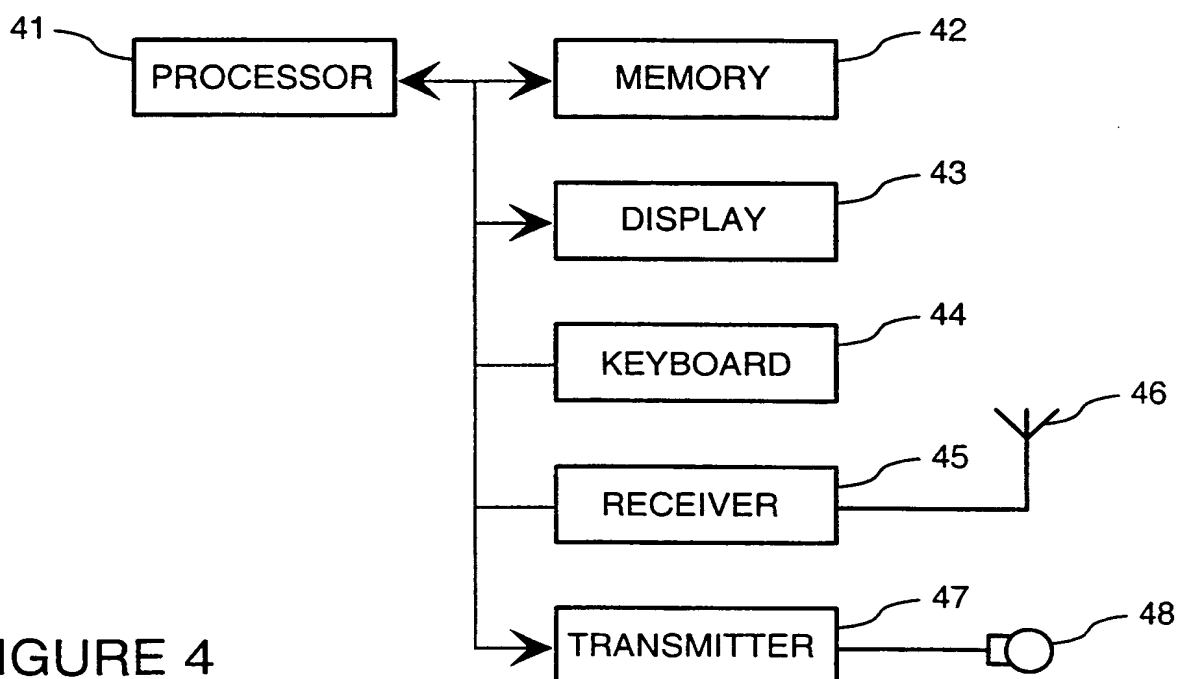


FIGURE 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 99/00572

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/30, H04Q 7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0549811 A1 (FUJITSU LTD.), 7 July 1993 (07.07.93), abstract --	1-9
A	US 5212831 A (J.C.CHUNG ET AL), 18 May 1993 (18.05.93), abstract --	1-9
A	EP 0497490 A2 (AMERICAN TELEPHONE AND TELEGRAPH COMPANY), 5 August 1992 (05.08.92), abstract -----	1-9

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

1 December 1999

Date of mailing of the international search report

10 -12- 1999

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Lars Jakobsson /itw
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

Information on patent family members

02/11/99

International application No.

PCT/FI 99/00572

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
EP	0549811	A1	07/07/93	JP	5075532 A	26/03/93
				WO	9302509 A	04/02/93

US	5212831	A	18/05/93	NONE		

EP	0497490	A2	05/08/92	CA	2059079 A,C	31/07/92
				JP	4336720 A	24/11/92
				US	5265150 A	23/11/93

PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Date of mailing (day/month/year) 16 January 2001 (16.01.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 48027	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.06.99)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☒ the name ☒ the address ☒ the nationality ☒ the residence

Name and Address SINIVAARA, Hasse Tahkorinne 19 A 1 FIN-02760 Espoo Finland	State of Nationality FI	State of Residence FI
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

New applicant/inventor for the United States only.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Athina Nickitas-Etienne Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
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Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☒ the name ☒ the address ☒ the nationality ☒ the residence

Name and Address HIRVONEN, Heikki Matomäenkatu 23 FIN-37830 Viiala Finland	State of Nationality FI	State of Residence FI
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

New applicant/inventor for the United States only.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Athina Nickitas-Etienne Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
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Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Date of mailing (day/month/year) 16 January 2001 (16.01.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 48027	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.06.99)

1. The following indications appeared on record concerning:		
<input checked="" type="checkbox"/> the applicant	<input checked="" type="checkbox"/> the inventor	<input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:		
<input checked="" type="checkbox"/> the person	<input checked="" type="checkbox"/> the name	<input checked="" type="checkbox"/> the address <input checked="" type="checkbox"/> the nationality <input checked="" type="checkbox"/> the residence
Name and Address SUONVIERI, Jukka Jenseninkatu 27 B 6 FIN-33610 Tampere Finland	State of Nationality FI	State of Residence FI
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: New applicant/inventor for the United States only.		
4. A copy of this notification has been sent to:		
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned	
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned	
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:	

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Athina Nickitas-Etienne
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

CORRECTED
VERSIONNOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Date of mailing (day/month/year) 05 February 2001 (05.02.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 48027	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.06.99)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address TOSSAVAINEN, Teppo Aallonkohina 8 D 57 FIN-02320 Espoo Finland	State of Nationality FI	State of Residence FI
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

New applicant/inventor for the United States only.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer C. Cupello Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

BERGGREN OY AB
P.O. Box 16
FIN-00101 Helsinki
FINLANDE

Date of mailing (day/month/year) 05 February 2001 (05.02.01)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 48027	
International application No. PCT/FI99/00572	International filing date (day/month/year) 29 June 1999 (29.06.99)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address JUUTI, Matti Kalamestarintie 11 E 4 FIN-04300 Tuusula Finland	State of Nationality FI	State of Residence FI
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

3. Further observations, if necessary:

New applicant/inventor for the United States only.

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer C. Cupello
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PCT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C. 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 16 February 2000 (16.02.00)	Applicant's or agent's file reference 48027
International application No. PCT/FI99/00572	Priority date (day/month/year) 29 June 1998 (29.06.98)
International filing date (day/month/year) 29 June 1999 (29.06.99)	
Applicant ESSER, Alex et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

10 January 2000 (10.01.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Claudio Borton

Telephone No.: (41-22) 338.83.38